

## SECTION 05311

### STEEL ROOF DECK

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The structural engineer will clearly show deck type, profile, section properties, and details for the connection of steel deck to supporting members on the Structural Drawings.  
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#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Steel roof deck system.

##### 1.2 DESIGN REQUIREMENTS

- A. Design steel roof deck in accordance with SDI Design Manual for Composite Decks, Form Decks, and Roof Decks.

##### 1.3 SUBMITTALS

- A. Submit the following in accordance with the requirements of Section 01300.
  - 1. Certificates of compliance for:
    - a. Steel deck.
    - b. Sheet metal for ancillary materials.
    - c. Self-drilling, self-tapping screws (mechanical fasteners).
    - d. Welders, in accordance in with AWS D1.1 for welders who will perform field welding.
  - 2. Shop drawings including the following information:
    - a. Materials furnished including accessories.
    - b. Splices and connections.
    - c. Erection plan.
  - 3. Catalog data for:
    - a. Metal deck.
    - b. Self-drilling, self tapping screws (mechanical fasteners).
    - c. Touch-up paint.
  - 4. Test data and design calculations to provide documentation of performance for mechanical fasteners.

##### 1.4 QUALITY ASSURANCE

- A. Conform to SDI Design Manual for Composite Decks, Form Decks, and Roof Decks.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle metal roof deck:
  - 1. With equipment of adequate capacity.
  - 2. Without overstressing or permanently damaging material.
  - 3. Without damaging finish.
- B. Deliver manufactured materials in original unopened packages, containers, or bundles with manufacturers' label intact and legible.
- C. Store all materials off the ground, under cover and away from damp surfaces.
- D. Remove damaged, unlabeled, or unsatisfactory material which does not meet this specification from the job site.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Steel Deck
  - 1. Provide sheet steel, for deck which is required to be galvanized, conforming to ASTM A446, Grade [ A ], [ C ], or [ E ], with a minimum yield strength of  $F_y = 33,000$  psi with G90 galvanized coating conforming to ASTM A525.
  - 2. Provide sheet steel, for deck which is required to be painted, conforming to ASTM A611, Grade [ C ], or [ D ], with a minimum yield strength of  $F_y = 33,000$  psi.
  - 3. Deck type, profile and section properties are shown on the Drawings. The information stated establishes minimum acceptable values. Alternate sections, profiles and/or designs may be submitted for approval.
  - 4. Provide venting slots in deck to receive light weight insulating concrete.
- B. Acoustic Steel Deck
  - 1. Provide a composite acoustic deck with a NRC of [ 0.70 ] when tested in accordance with ASTM C432, [ 20 ] gage sheet steel with G90 galvanized coating conforming to ASTM A525, [ 1 1/2 ] inches deep, perforated with manufacturer's standard holes. Deck type, profile, and section properties are shown on the drawings. The information stated establishes minimum acceptable values. Alternative sections, profiles and/or designs may be submitted for review.
- C. Primer
  - 1. Provide primer and touch-up primer conforming to SSPC 15, Type 1, red oxide, for non-galvanized surfaces.
  - 2. Provide touch-up primer conforming to SSPC 20, Type 1, inorganic, for galvanized surfaces.
- D. Welding Materials
  - 1. Provide welding electrodes complying with the requirements of AWS D1.3.
  - 2. Provide [ 14 ] gage weld washers where required.

E. Mechanical Fasteners

1. Provide Number [ 12 ] Tek Fasteners by ITW Builder, Itasca, Illinois, with ultimate capacities equal to or greater than the following values:
  - a. Pullout in [ 3/16 ] inch thick steel: [ 3400 ] pounds.
  - b. Shear, fastening [ 20 ] gage steel to [ 20 ] gauge steel: [ 750 ] pounds.
  - c. Force to pull [ 20 ] gage steel over head of fastener: [ 1400 ] pounds.

F. Accessories

1. Provide steel accessories that are a standard item of the steel deck manufacturer fabricated with steel of the same type and finish as the deck.
2. Provide manufacturer's standard flute closure of closed cell foam rubber, 1 inch thick, to fit selected deck profile.

2.2 FABRICATION

- A. Shop fabricate decking and accessories to exact lengths and shapes.
- B. Fabricate deck sheets to be formed identically and so each sheet registers smoothly with adjacent sheets.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Erect metal decking in accordance with SDI Design Manual for Composite Decks, Form Decks, and Roof Decks.
- B. Erect metal decking in accordance with the approved erection drawing and in accordance with the manufacturer's instructions.
- C. Welding
  1. Perform all welding in accordance with AWS D1.3.
  2. Provide weld washers for deck in accordance with manufacturer's requirements.
  3. Weld in accordance with the diaphragm requirements stated on the Drawings.
  4. Avoid burning through the deck while field welding to supports.
- D. Mechanical Fasteners
  1. Install connections with mechanical fasteners in accordance with the manufacturer's instructions and the approved erection drawings.
- E. Provide 1 1/2 inch minimum bearing on steel support members. Align and level on supports.
- F. Provide 4 inch minimum bearing on masonry support members. Align and level on supports.
- G. Reinforce all holes that interrupt more than 1 rib.
- H. Install all accessories shown on the approved erection drawings.

- I. Seal deck joints, lap ends, and penetrations with sealant.
- 3.2 CLEAN-UP AND FINISH TOUCH-UP
- A. After erection, remove weld spatter, grease and oil from decking.
  - B. Immediately after welding deck in place, touch-up welds, burned areas, and surface coating damage. Use prime paint specified in Part 2.

END OF SECTION